

REMARKS

Claims 1-28 are currently pending. The Examiner has newly rejected Claims 1-5, 7, 9-10, 12, 14, 16-24 and 28 as unpatentable over Hiura in view of Andrew; Claims 6, 8, 11, and 13 as unpatentable over Hiura and Andrew in view of Cain; Claim 15 as unpatentable over Hiura and Andrew in view of Christensen; Claim 25 as unpatentable over Hiura in view of Andrew and Paterson; and Claims 26 and 27 as unpatentable over Hiura in view of Andrew and Paterson and further in view of Selby. Based on the currently submitted amendments and the reasons set forth below, Applicants respectfully submit that the claims as amended are patentable over the cited art.

The present invention teaches and claims a system and method for rapid development of graphic user interfaces to provide enhanced control for event handling on a window. As recited in Claims 17-28, the rapid graphical user interface development comprises means for and steps of creating a plurality of base classes and subclasses for discrete behaviors, creating at least one window application control for the window, instantiating a control enhancer object as an interface to the window for the control, customizing the control enhancer object by associating selected behaviors to it using the plurality of classes and subclasses, and passing a pointer for the control to the control enhancer. As recited in Claims 1-16, the method for providing

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enhanced functionality of window controls in response to at least one event received at the application display area of said window, said window comprising a plurality of window controls, wherein each of a plurality of control enhancer objects provides an interface to a one specific window application control for said window object and is customized with specific behaviors from a plurality of base classes and subclasses, comprises: receiving an event at the application display area of said window, determining at least one of said plurality of control enhancer objects that is interested in said event, passing said event to said at least one interested control enhancer object; and handling the event at said at least one interested control enhancer object. Applicants respectfully assert that the cited references do not teach or suggest the invention as claimed.

The primary reference for all rejections is the Hiura patent. The Hiura patent is directed to a system and method for separating the design and implementation of a user interface from the design and implementation of the functional portion of a software program. Hiura provides logic objects and Look and Feel objects. The Look and Feel (hereinafter L&F) agents control the appearance and behavior of the user interfaces. Hiura explicitly teaches that "[r]espective L&F agents in the system may control different respective user interfaces at a given time" (Col. 5, lines 36-39). Accordingly, for any one user interface (e.g., the mouse, a touch screen, or a keyboard) there is one L&F agent that

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controls the appearance and behavior of the interface. The L&F agent has a Local Object Manager (hereinafter LOM) which maintains a list of "widgets" or objects which represent display elements. The logic objects, one for each defined execution unit of logic, interface with the L&F agent by indicating what resource to display in order to advance the execution of the logic. As taught at Col. 6, lines 11-39, the logic object would generate a "set_cw_resource" command to the L&F agent specifying which "widget" should be displayed. The LOM of the L&F agent invokes the appropriate widget from the list of widgets and gives it the logic resource data and configuration information to display it for user input. Upon receipt of user input to the display, the input is sent by the L&F agent to the logic object for processing, with the foregoing process flow being repeated as necessary based on the logic flow. Accordingly, what the Hiura patent teaches is the L&F agent selecting display objects based on the logic object's resource request.

Applicants respectfully assert that the Hiura patent does not teach or suggest the invention as claimed. Applicants first note that the Hiura patent does provide an environment in which the current invention could be implemented, namely an object-oriented environment GUI programming environment. Having logic and display design done separately provides flexibility in both programming and use. What the present invention provides is a system and method to aid in rapid graphical user interface

development in object-oriented development environments where subclassing (e.g., buttons, list boxes, edit controls, etc.) provided by the compiler or a GUI toolkit are not appropriate. The invention provides for adding functionality to native controls, including, but not limited to, initializing the control with data or other settings, retrieving data from the control, formatting the data, validating the data entered, storing validated data in file or database, handling multiple controls to create the illusion of a single control, and establishing relationships between controls. The inventive system and method provide a set of building blocks referred to as control enhancers, each including a data handler, data initializer, data finalizer and means of maintaining an acting upon control relationships between control enhancers. Where Hiura simply provides logic objects and one L&F agent per user interface and details the interaction of the two during logic execution, the current invention provides the tools and method for development of window controls having any combination of base class or subclass functionality using the control enhancer objects and for the dynamic and flexible implementation of control enhancer objects during use.

Applicants respectfully disagree with the Examiner's interpretation of the Hiura patent teachings. First the Examiner analogizes the L&F agents to the CEOs. The Examiner analogizes the lists of widgets (maintained by the LOM of the L&F agent) to

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the list of CEOs. Finally the Examiner analogizes the claimed window object to the logic object of Hiura. Applicants note that the Hiura patent provides an L&F agent for each user interface. Clearly Hiura is not providing a plurality of control enhancer objects each providing an interface to one specific window application control the window object, wherein each of the control enhancer objects is customized with at least one of a plurality of specific behaviors using base classes and subclasses. Moreover, a list of display objects (i.e., widgets) maintained by the LOM of the L&F agent cannot be said to be the same as a list of control enhancer objects. Finally, the logic objects of Hiura cannot be said to read on window objects recited in the claim, since Hiura's logic objects are, but Hiura's own definition, not window objects.

Applicants also disagree with the application of Hiura's teachings to the claim language of a window object passing a received event to all control enhancer objects in a list of control enhancer objects, with the control enhancer objects determining which should handle the event. Hiura expressly teaches that the logic object passes a resource command to the L&F agent, which then accesses its widget list to select the appropriate display. Clearly the logic object is not passing an event to all L&Fs on a list, since there is only one L&F for each user interface. Moreover, the list is of widgets and not of L&F agents. If the "event" which the Examiner is analogizing to the

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claim language is receipt of a logic object request, then clearly the Hiura teachings do not obviate the claim language. Further, if the "event" is receipt of user input, Hiura expressly teaches at Col. 7, lines 1-10 that user input is passed by a widget to the L&F and the L&F notifies the logic object. Clearly such is not the same as or suggestive of passing an event to a list of control enhancer objects. Accordingly, Applicants respectfully conclude that the Hiura patent does not teach or suggest those features which are recited in Claims 1-16. Claims 17-28 are explicitly drawn to the programming environment wherein the control enhancer objects are instantiated and customized. Applicants respectfully assert that neither the logic objects nor the L&F agents obviate the invention as claimed. As discussed above, the logic objects and/or L&F agents could be provided with additional functionality using the control enhancer objects of the present invention; however, they do not anticipate or obviate them.

The Examiner has acknowledged that Hiura does not teach customizing with specific behaviors from a plurality of base classes and subclasses and has cited the Andrew patent for those teachings. The cited teachings from Andrew, from Col. 7, lines 49-67 do not teach customizing control enhancer objects. Rather, as expressly taught at Col. 7, lines 46-47, the Andrew objects "inherit these defined classes." Clearly, Andrew does not provide those teachings which are missing from the Hiura patent.

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Even if one were to modify Hiura with Andrew, one would not arrive at the invention as claimed. One would arrive at a system and method having logic objects and L&F agents which maintain lists of display objects which objects have inherited defined classes.

As to Claims 2 and 18, the cited Andrew teachings refer to a pointer to data; but, do not teach or suggest a data handler as is expressly defined in the Specification at page 7, line 20, et seq.. Similarly, as to Claims 3, 19 and 20, the cited Andrew teachings describe initializing values by setting them to stored values. Such is not the same or suggestive of a data initializer as is defined by the Specification at page 8, lines 1-13. As to Claims 4 and 21-24, Applicants note that the SetActive teachings are cited against both the data initializer and the data finalizer. Clearly, it cannot be both. Moreover, the data finalizer is expressly defined in the Specification at page 8, lines 14-25, and is not found in Andrew.

As to Claims 5 and 10, Applicants respectfully assert that the Hiura teachings from Col. 6, lines 33-34 of managing multiple context of logic objects is not the same as or suggestive of the claimed handling of relationships among window controls and the respective control enhancer objects.

With regard to Claims 7 and 12, the cited Andrew teachings regarding determining if a change has been made and persistently storing the change from Col. 8, is not the same as validating

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data at a data finalizer. Clearly if data is being changed in Andrew, then the validity of the data is not being checked.

With regard to Claims 9 and 14, Applicants refer to the arguments above regarding Claim 1 as well as the foregoing arguments regarding the data handler, data initializer, and data finalizer.

With regard to Claims 6, 8, 11 and 13, the Examiner has additionally cited the Cain patent. The Cain patent is directed to a graphical tool which can be used to create a GUI with methods attached to the GUI objects. The Cain "methods" are not the same as nor suggestive of control enhancer objects, which each provide an interface to a specific window application control for a window object customized with specific behaviors, as is taught and claimed. Applicants respectfully assert that the combination of teachings from the references would not obviate the presently claimed invention. The combination would result in a Hiura system with L&F agents, wherein the graphical display of the widget could be created with the Cain tool. There are simply no teachings in either Hiura, Andrew, or Cain which relate to the creating and use of control enhancer objects for specific application controls within a window. Clearly, the combination would not obviate the invention as claimed. The cited Cain teachings from Col. 9, line 43-56 teaches that a user can create different design documents. Applicants disagree with the Examiner's conclusion that one would have been motivated to

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provide a specific appearance of data; and, reiterate that the combination would not yield the invention as claimed.

With regard to Claim 15, the Christensen patent is additionally cited for its teachings regarding a status or control function (Co. 6, lines 22-24) and regarding secondary initialization unless a control strip is allocated (Col. 9, lines 49-65). Those teachings do not suggest the claimed accessing, comparing and determining.

With regard to Claim 25, the Paterson patent has been cited for its teachings regarding display of a simulation model showing relationships. Applicants respectfully assert that modifying the Hiura and Andrew combination with Paterson would simply yield a Hiura system with widgets that are simulation models showing relationships. The combination would not, however, yield the invention as claimed.

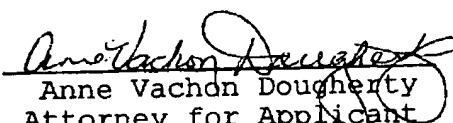
Finally with regard to Claims 26 and 27, the Examiner has additionally cited the Selby patent. The Selby patent provides a structured approach by pre-defining controls and their attributes in a table (500). When a control is needed, Selby pulls up the table and selects the control. Selby does not provide control enhancer objects as interfaces to windows, nor does Selby provide for customization of control enhancer objects with classes and subclasses to provide specific behaviors to be defined for each window control. The present inventive creation and use of control enhancers allows developers the flexibility to provide

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interfaces (i.e., the control enhancer objects) which do not require specific coding for interfacing with the windows; and, then allows customization of the objects for the required specific behaviors at a base class and subclass level. Clearly the Selby patent disclosure of table-driven control selection does not teach or suggest the creation and use of control enhancer objects as taught and claimed by the present invention.

Based on the foregoing amendments and remarks, Applicants respectfully request reconsideration of the rejections based on cited references, withdrawal of the rejections, and issuance of the claims as amended.

Respectfully submitted,
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